RECENT DISCOVERIES IN THE NEWFOUNDLAND FLORA

M. L. FERNALD

(*Continued from page 283*)

EUPHRASIA. Since the revision of *The Genus Euphrasia in North America*, RHODORA, xvii. 181–201 (1915)—Contrib. Gray Herb. no. xliv.—by Fernald & Wiegand, much material has been collected in Newfoundland and eastern Canada and a few collections have been made in Labrador. In so far as the recent collections amplify our understanding of the species and their ranges they are here recorded, following the sequence of the paper above referred to.

*EUPHRASIA OAKESII Wettst. In addition to the alpine stations already recorded the following should be listed. NEWFOUNDLAND: turfy barrens and slopes, Sacred Island, Straits of Belle Isle, *Wiegand, Gilbert & Hotchkiss*, no. 28,981. QUEBEC: in a single dryish turfy pocket, at 915–1100 m., southwestern slope of Mt. Fortin, Matane Co., *Fernald & Pease*, no. 25,269; mossy spots on calcareous sea-cliffs and rock-slides by Gulf of St. Lawrence, slightly west of Marten River, Gaspé Co., *Fernald & Pease*, no. 25,275.

The Quebec material is too young for positive identification but its foliage and pubescence are quite like those of typical *Euphrasia Oakesii*. The Mt. Fortin material comes from a turfy alpine habitat; the material from near Marten River, although from near sea-level, was associated with *Luzula spicata* (L.) DC., *Draba nivalis* Lilj., *Saxifraga cernua* L., *Potentilla nivea* L., *Androsace septentrionalis* L. and other arctic-alpine species. Most of the material from the Shickshock Mts., of Matane County, originally distributed as *E. Oakesii*, proves upon restudy to belong with *E. Williamsii*.

*E. WILLIAMSII Robinson. Straits of Belle Isle, NEWFOUNDLAND: turfy hillsides and barrens, western side of Quirpon Island, *Wiegand, Gilbert & Hotchkiss*, no. 28,973; in carpet of *Salix Uva-ursi* Pursh, open peaty and gravelly spots on crests of trap cliffs, Cape Onion, *Fernald & Long*, no. 28,974; dry gravelly and turfy limestone barrens, Savage Point, *Fernald & Long*, no. 28,976. Matane Co., QUEBEC (all distributed as *E. Oakesii*): wet calcareous cliffs and ledges, Nettle Gully, alt. about 400 m., northern base of Mt. Collins, *Fernald, Griscom, Mackenzie, Pease & Smith*, no. 26,001; talus of mica schist, chimney east of Razorback Ridge (alt. 850–1000 m.), Mt. Logan, *Pease & Smith*, no. 26,002; dry talus and ledges of green schists, at about 900–1125 m. alt., Hanging Valley, Mt. Pembroke, *Griscom & Pease*, no. 26,003; gravelly and turfy slides and chimneys at about 850–1000 m. alt., in the steep schistose southern face of Mt. Fortin, *Fernald &*

Smith, no. 26,004; shelves of cliffs and upper talus of green schists, alt. about 1100–1150 m., head of Hanging Valley, Mt. Pembroke, *Fernald & Smith*, no. 26,005.

E. WILLIAMSII, var. VESTITA Fern. & Wieg. Including *E. Oakesii*, forma *lilacina* Fern. & Wieg. Northern and western Newfoundland and adjacent Quebec Labrador; additional records follow. NEWFOUNDLAND: crests of dry trap cliffs and turfy headlands, Sacred Island, Straits of Belle Isle, *Wiegand, Gilbert & Hotchkiss*, nos. 28,975, 28,987; dry limestone gravel, Dog Peninsula, St. Margaret Bay, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,989; turfy limestone crest, alt. 650 m., Killdevil, Bonne Bay, *Fernald, Long & Fogg*, no. 1999; dry upper diorite slopes and rock-crests at about 675–750 m. alt., Lookout Mt., Bonne Bay (type region), *Fernald, Long & Fogg*, nos. 1996, 1997; trap ledges and gravel, subalpine southern slope of Lark Mt., Bay of Islands, *Fernald, Long & Fogg*, no. 400. QUEBEC: calcareous sandstone cliffs of the upper terrace, Blanc Sablon (type region of *E. Oakesii*, forma *lilacina*), *Fernald, Wiegand & Long*, no. 2896. See pp. 6, 88.

Additional experience indicates that *Euphrasia Williamsii* var. *vestita* and *E. Oakesii*, forma *lilacina* are inseparable. The plant stands midway between typical *E. Williamsii* (with chocolate-brown to maroon corollas and glabrous leaves) and typical *E. Oakesii* (with the corolla white, with violet veins, and the leaves pilose-hirtellous). In var. *vestita* the color of the corolla varies ("purple, not chocolate" in no. 28,987; "crimson" in the type; "chocolate-brown to maroon" in no. 28,989; "chocolate-purple" in no. 400; "lilac" in type of *E. Oakesii* var. *vestita*). It may eventually seem wiser to treat the group as one species, *E. Oakesii*, with localized varieties differing in color of corolla and in pubescence, parallel with the variations of *E. purpurea*.

E. PURPUREA Reeks. Additional localities in NEWFOUNDLAND: turfy sandstone ledges, White Point, Bonne Bay, *Fernald, Long & Fogg*, no. 1990; brackish spot and gravelly beach, East Arm, Bonne Bay, *Fernald, Long & Fogg*, nos. 2,000, 2,001; knolls in sphagnous marsh, Lark Harbor, Bay of Islands, *Fernald, Long & Fogg*, no. 402; turfy and gravelly talus of sandstone sea-cliffs, Woody Island, Bay of Islands, *Fernald, Long & Fogg*, nos. 403, 404 (very succulent); wet mossy barrens back of Port aux Basques, *Fernald, Long & Dunbar*, no. 27,043; sandy loam back of barrier-beach, Great Barachois (or Barasway Bay), Burgeo and La Poile, *Fernald, Long & Fogg*, no. 406.

*E. PURPUREA, forma CANDIDA Fern. & Wieg. Described from Magdalen Islands and from Saguenay Co., Quebec; clearly a white-flowered form of the glabrous *E. purpurea*. Now known from the Straits of Belle Isle, NEWFOUNDLAND: turfy upper border of limestone strand, Cape Norman, *Wiegand & Long*, no. 29,001; open peaty and

gravelly spots on crests of trap cliffs, Cape Onion, *Fernald & Long*, no. 28,977 (minutest of plants, fully mature and branching flowering specimens with leafy summit often only 3 mm. in diameter).

*E. PURPUREA, var. RANDII (Robinson) Fern. & Wieg. Typical var. *Randii*, with corollas purple and the faces of the green leaves sparsely crisp-pubescent, proves to be frequent on the coast of Newfoundland and to extend farther north on the Labrador than we knew in 1915. The new northern records follow. LABRADOR: fresh marsh, upland terrace, Indian Harbor, lat. 54° 25′, *Harlow Bishop*, no. 530. NEWFOUNDLAND: turfy and shingly limestone shore, Capstan Point, Flower Cove, *Fernald, Long & Dunbar*, no. 27,063, *Fernald & Wiegand*, no. 29,013; turfy knolls near the hospital, Flower Cove, *Fernald*, no. 29,015; basaltic talus near mouth of Wallace's Brook (so. of Bonne Bay), *Fernald, Long & Fogg*, no. 1993; shelves and talus of diorite cliffs, Western Head, Bonne Bay, *Fernald, Long & Fogg*, no. 1994; turfy crests of trap headlands, Lark Harbor, *Fernald, Long & Fogg*, no. 401; bare spots on peaty and gravelly slopes and peaty and gravelly thickets, French (or Tweed) Island, Bay of Islands, *Fernald, Long & Fogg*, nos. 407 (dense form in open habitat), 408 (lax shaded form); dry peaty barrens among the gneiss hills back of Port aux Basques, *Fernald, Long & Dunbar*, nos. 27,048, 27,049; in turf on granite ledge, Gaultois, *Fernald, Long & Dunbar*, no. 27,045; granitic ledges, Ramea, *Fernald, Long & Dunbar*, no. 27,046; turfy sand plain back of the beach, Sand Bank, west of Burgeo, *Fernald, Long & Fogg*, no. 405; granite ledges and boulders by the sea, Burgeo, *Fernald, Long & Dunbar*, no. 27,047; damp depressions in sand and gravel back of barrier beach, Argentea, *Fernald, Long & Dunbar*, no. 27,044.

E. PURPUREA, var. RANDII, f. ALBIFLORA Fern. & Wieg. Reported from Newfoundland in 1915 only from the East Coast. Now known to be more general around the coast: dry gravel of limestone barrens, southern half of Burnt Cape, Pistolet Bay, *Fernald & Long*, no. 28,996; turfy or peaty pockets in limestone ledges, Sandy (or Poverty) Cove, Straits of Belle Isle, *Fernald, Long & Dunbar*, no. 27,036 (distributed as *E. Oakesii*); turfy and gravelly limestone strand, Yankee Point, Straits of Belle Isle, *Fernald, Wiegand & Long*, no. 28,982; peaty or turfy pockets in limestone barrens, Brig Bay, *Fernald, Long & Dunbar*, no. 27,040 (distributed as *E. Oakesii*); turfy limestone shore and damp peaty hollows in limestone barrens, Sandy Cove, Ingornachoix Bay, *Fernald, Long & Dunbar*, nos. 27,041, 27,042 (distributed as *E. Oakesii*); crests, crevices and talus of trap sea-cliffs, French (or Tweed) Island, Bay of Islands, *Fernald, Long & Fogg*, no. 399; wet bog-barrens, Trepassey, *Fernald, Long & Dunbar*, no. 27,052.

On account of its extreme dwarfing much of the material was originally mistaken for *E. Oakesii*, but even the small plants (unless crowded) have a strong tendency to divergent basal branching, while the smaller-flowered *E. Oakesii* is almost uniformly simple, the

rare branching plants having few ascending branches chiefly from the median axils.

E. PURPUREA, var. FARLOWII (Robinson) Fern. & Wieg. Frequent near the coast; the following NEWFOUNDLAND records may be noted: turfy barren slopes, Sacred Island, *Wiegand, Gilbert & Hotchkiss*, no. 28,980; open peaty and gravelly spots on crests of trap cliffs, Cape Onion, *Fernald & Long*, no. 28,979; turfy and peaty spots (various stations, as *E. Oakesii*), Flower Cove, *Fernald, Long & Dunbar*, nos. 27,034, 27,035, 27,037, 27,038; turfy limestone shore, St. Barbe, *Fernald, Long & Dunbar*, no. 27,039, as *E. Oakesii;* dry limestone gravel, Dog Peninsula, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,983; headlands, Green Gardens, Cape St. George, *Mackenzie & Griscom*, no. 11,124; dry peaty barrens among the gneiss hills back of Port aux Basques, *Fernald, Long & Dunbar*, no. 27,054; turfy pastures, Argentea, *Fernald, Long & Dunbar*, no. 27,053; wet bog-barrens, Trepassey, *Fernald, Long & Dunbar*, no. 27,052; peaty pockets in silicious rocks near crest of South Hill, St. John's, *Fernald, Long & Dunbar*, no. 27,051.

*E. PURPUREA, var. FARLOWII, f. IODANTHA Fern. & Wiegand. Originally from Matinicus Island, Maine, now known from several regions in NEWFOUNDLAND: turfy and gravelly limestone strand, Yankee Point, Straits of Belle Isle, *Fernald, Wiegand & Long*, no. 28,985; turfy limestone barren, Capstan Point, Flower Cove, *Fernald*, no. 28,984; turfy limestone barrens, Dog Peninsula, St. Margaret Bay, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 28,988; dry limestone barrens, upper slopes and tablelands, alt. 200–300 m., Table Mt., Port au Port, *Fernald & Wiegand*, nos. 3998 (individuals with glandular bracts), 4002 (bracts glandless); dry peaty crests of gneiss hills near Sand Bank, west of Burgeo, *Fernald, Long & Fogg*, no. 409.

E. DISJUNCTA Fern. & Wieg. The commonest species of Newfoundland with medium-sized whitish corolla, general in the northern, central and western regions, south to Notre Dame Bay, the Exploits Valley and the Cod Roy area.

E. ARCTICA Lange. Recorded from Newfoundland only from Table Mt., Port au Port Bay; common in northern Newfoundland: St. Anthony, September 10, 1923, *A. G. Huntsman;* Quirpon Harbor, September 8, 1923, *Huntsman;* slaty cliffs and talus, Cape Raven, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 29,000; upper border of limestone gravel-beach and turfy limestone barrens, Burnt Cape, Pistolet Bay, *Fernald & Long*, nos. 28,995, 28,997; turfy limestones barrens, Cape Norman, *Wiegand & Long*, no. 29,002; turfy limestone barrens, Yankee Point, Straits of Belle Isle, *Fernald, Wiegand & Long*, nos. 29,005–29,009; turfy limestone barren, Capstan Point, Flower Cove, *Fernald*, no. 29,004, *Fernald & Wiegand*, no. 29,012; springy cliffs and talus above the Overfall of Deer Pond Brook, Highlands of St. John, *Wiegand, Gilbert & Hotchkiss*, no. 29,017; dryish limestone

talus, western face of Doctor Hill, *Fernald & Long*, no. 29,020; turfy limestone strand, Bard Harbor, St. John Bay, *Wiegand & Gilbert*, no. 29,018 (gigantic, some plants nearly 6 dm. high, with bracts 2 cm. broad); turfy limestone barrens, St. John Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, nos. 28,992, 28,994, 29,026; turfy terraces and slopes on limestone barrens, Pointe Riche, *Fernald, Long & Fogg*, no. 1989.

As *Euphrasia arctica* I am treating the plant so common about the coast of the lower St. Lawrence in Quebec and in northwestern Newfoundland, thence north around the coast of Labrador to Hudson Bay; also on the coast of Greenland, on Iceland and the Faeröe Islands and somewhat general around the subarctic regions. Our plant is well matched by much Greenland material as well as specimens from Iceland and arctic Scandinavia, and it seems to be quite inseparable from the Greenland, Iceland and Faeröes plant so beautifully illustrated, as *E. officinalis*, var. *latifolia*, by Lange in Fl. Dan. xvii. fasc. xlix. 9, t. mmdcccx. (1877); the smaller and less pubescent plants from Labrador and Newfoundland so closely matching Lange's plate that the latter must have been made from very similar material. *E. arctica* was published in a list of plants of the Faeröes by Rostrup as

**E. arctica* Lge (in litt.). Denne forhen ubeskrevne, ret ejendommelige art eller underart er temmelig almindelig, den er også funden i Grønland og Island ifølge meddelelse af prof. Lange. Char.: Folia viscoso-puberula, reniformi- vel cordato-orbicularia, obtusissime crenata, margine revoluta; bracteae majusculae, sensim acutius crenatae v. serratae; flores subcapitato-congesti.[1]

Unfortunately, however, to work back to the beginning of a complicated question, Hooker, not at all understanding the genus *Euphrasia*, had enumerated from "Prairies of the Rocky Mountains," *Drummond*, a *E. officinalis*, "β. var. rotundifolia, laxiflora.—E. latifolia. *Ph. l. c.* (*non* L.)"[2] The Drummond plant, from the Rocky Mts. (*E. officinalis*, β. of Hook.), as shown by a good sheet of it in the Gray Herbarium, is *E. disjuncta* Fern. & Wieg. Whether or not it was like anything Pursh may have seen from Labrador, it is now impossible to say. Pursh gave no new diagnosis and he certainly had no thought of publishing a new species. His publication was very simple and clearly shows that he was merely identifying some plant of Labrador with *E. latifolia* of Willdenow's Species Plantarum.

latifolia. 2. E. foliis ovatis dentato-palmatis, floribus spicatis, corollis tubulosis, laciniis labii inferioris obtusis. *Willd. sp. pl.* 3, *p.* 192.

[1] Rostr. Bot. Tidsskr. iv. 47 (1870).

[2] Hook. Fl. Bor.-Am. ii. 106 (1838).

Icon. *Sabb. hort.* 3. *t.* 7. *Moris. hist.* 3. *s.* 11. *t.* 24. *f.* 8.
In Labrador. *Colmaster.* ⊙. July. *v. s. in Herb. Dickson.*
Flowers smaller, pale purple.[1]

Pursh, as stated, was obviously simply identifying a plant in Dickson's herbarium with the already published *Euphrasia latifolia* L. (and subsequently Willd.), giving word-for-word Willdenow's diagnosis of a plant of southern Europe and northern Africa (which does not belong even to the genus *Euphrasia* as now accepted, but to *Parentucellia*) and citing two plates of the latter.

Only by one comparative phrase, "Flowers smaller, pale purple," thrown in as a comment, did Pursh depart from the literal copying of Willdenow's description of *Euphrasia latifolia* L., i. e. *Parentucellia latifolia* (L.) Caruel. The latter plant has red flowers 1–1.5 cm. long, much larger than in any North American species of true *Euphrasia*. Pursh's comparative comment, if meant to indicate that the Labrador specimen which he saw in Dickson's herbarium had "Flowers smaller" than in *E. latifolia* L. of the Mediterranean region, would, consequently, be quite useless in making out which of the 11 Euphrasias known from the Labrador Peninsula he might have seen. Pursh's comparative comment should be interpreted, however, like parallel cases in his *Flora:* he was comparing the plant which he misidentified with the Mediterranean *E. latifolia* with the species preceding it in his *Flora*, his *E. "officinalis* . . . In Canada. *Michaux.* . . . *v. s.* Flowers white, with purple veins." Since the Michaux plant, as shown by his material at Paris which I have examined, is the only *Euphrasia* known in the region of Canada traversed by either Michaux or Pursh, *E. canadensis* Towns., which, as defined by Wiegand and me from full field-knowledge of it, has "corolla 5–6.5 mm. long, white with lavender or bluish veins," it should be clear that Pursh's critical note, that the Labrador plant has "Flowers smaller, pale purple," may have some real significance. Of the 11 Euphrasias known from Labrador 6 (*E. Oakesii, E. Williamsii* var. *vestita, E. purpurea* and vars. *Randii* and *Farlowii*, and *E. disjuncta*) have flowers measurably smaller than in *E. canadensis* (the Canadian "*E. officinalis*" of Pursh's Flora), and of these *E. Williamsii* var. *vestita, E. purpurea* and *E. purpurea* var. *Randii* have the flowers purple, though there may be a lilac tinge on the upper lip of the others. Unfortunately, the plant which Pursh saw in Dickson's herbarium is not now known; though, in view of the facts, that Pursh was merely misidentifying it with a

[1] Pursh, Fl. Am. Sept. ii. 430 (1814).

species of another genus and that the name *E. latifolia*, misapplied by him, had already been preëmpted by Linnaeus, the search for the plant in Dickson's herbarium might seem a needless one. But, still more unfortunately, several European botanists have magnified Pursh's misidentification of a Labrador plant with *small, purple flowers* with a Mediterranean plant of another genus into an assumption that Pursh intended to describe a new species! Consequently, the name *Euphrasia latifolia*, wrongly ascribed to Pursh, has got very extensively into the literature of *Euphrasia* and far-reaching conclusions have been drawn therefrom.

Hooker, having material of the remotely flowered *Euphrasia disjuncta*, with smallish white corollas, from the Canadian Rocky Mts., called it, as already noted, *E. officinalis*, "β. var. rotundifolia, laxiflora.—E. latifolia. *Ph. l. c.* (*non* L.)." Lange, after properly publishing *E. arctica* in 1870, discovered Hooker's identification here quoted and, apparently not taking the trouble to learn the character of Pursh's original publication, abandoned his own well published *E. arctica*, with white corollas 5–8 mm. long, and in the text accompanying his beautiful plate in Flora Danica (t. mmdccccx.) reduced it to varietal rank as *E. officinalis* var. *latifolia* (Pursh). Lange's synonymy there given (in 1877) was as follows: "E. latifolia *Pursh* Fl. Am. sept. 2, p. 430; E. officinalis var. rotundifolia *Hook.* Fl. Amer. bor. 2, p. 106; E. arctica *Lge.* (Bot. Tidskr. I. 4, p. 47)," in explanation of which Lange made the "*Obs.* Ex definitione *Hookerii* l. c. nostra planta respondere E. latifolia *Pursh.*"

As pointed out in a preceding paragraph, Pursh was merely misidentifying some plant of Labrador with *small purple flowers* with the Mediterranean *E. latifolia* L. If it be maintained that by his phrase "Flowers smaller, pale purple" Pursh was defining a new species, it must at least be admitted that the only plants known with small and purple flowers which he could have seen from Labrador are the three already enumerated, *E. Williamsii* var. *vestita* with purple (usually chocolate-purple) corollas only 2.5–4 mm. long, and *E. purpurea* and its var. *Randii*, with deep-purple to pale-roseate corollas also only 2.5–4 mm. long. Pursh certainly was not describing the plant with white corollas 5–8 mm. long, so beautifully illustrated by Lange and supposed by him to be "E. latifolia *Pursh.*" The plant which Hooker had from the Rocky Mountains is the slender species with small and remote white flowers (corollas 4–5.5 mm. long), *E. disjuncta*, and not

conspecific with the plant of Greenland, Iceland and the Faeröes illustrated by Lange. Incidentally the name, *E. officinalis*, var. *rotundifolia* started with Lange; Hooker had given it no name, merely "β. var. rotundifolia, laxiflora," this descriptive phrase not constituting a true *name*. Eliminating from Lange's publication in Flora Danica the citations which do not belong to the species he described and illustrated, we have left the characteristic subarctic species which he had already properly published as *E. arctica*.

Wettstein, misled by the earlier literature, took up *E. latifolia* as of Pursh, with *E. arctica* Lange as a synonym, in his great *Monographie der Gattung Euphrasia* (1896) and, quite naturally, he has been followed by others who have not realized the errors involved. Wettstein, however, himself realized the doubt surrounding the name *E. latifolia* as used by Pursh, but since *E. latifolia* L. (the description of which Pursh had directly copied from Willdenow) is now removed to *Parentucellia*, Wettstein felt that something Labradorean should be attached to the name in Pursh's sense. Unfortunately, however, such slight characterization as can be deduced from Pursh's "Flowers smaller [than in *E. canadensis*, with white corollas smaller than in *E. arctica*], pale purple" leads in the direction of *E. purpurea*, rather than to the large- and white-flowered *E. arctica*. However that may be, the homonym-rule now effectively disposes of *E. latifolia* Pursh in Wettst. Mon. Euphr. 136 (1896), for *E. latifolia* L. (1753) abundantly antedates it.

Mr. H. W. Pugsley[1] feels, I do not understand why, that there is doubt as to what Lange meant by *E. arctica*. Lange's description, published by Rostrup, was clear; in Flora Danica where, following the wholly uncomprehending suggestion of Hooker, Lange revived the indefinite "*E. latifolia* Pursh," he placed his own *E. arctica* unequivocally with it and illustrated in an unexcelled plate the common plant of Greenland, Iceland and the Faeröes, with white corollas 5–8 mm. long. Wettstein, likewise, did not hesitate to treat *E. arctica* as the boreal plant described and illustrated by Lange, though he perpetuated the error of calling it "*E. latifolia* Pursh."

In view of this seeming clarity (clarity most unusual in taxonomic work prior to the very recent insistence upon designating a "type") as to what Lange actually meant by *Euphrasia arctica*, it is quite perplexing to find Pugsley doubting the identity and substituting for

[1] Pugsley, *A Revision of the British Euphrasiae*, Linn. Soc. Journ., Bot. xlviii. 490, 492 (1930).

"*Euphrasia latifolia* Pursh ex Wettstein" the new name *E. frigida*. Pugsley's substitution was made in a foot-note quoted below:

> The recent Congress at Cambridge having decided to reject homonyms, the name *E. latifolia* cannot be used. It is therefore proposed, as some doubt attaches to the identity of *E. arctica* Lange, to substitute a fresh name EUPHRASIA FRIGIDA.

Surely, if there is any doubt whatever (which I am unable to discover) regarding the real identity of *Euphrasia arctica* Lange, there is hopeless doubt regarding the exact identity of *E. frigida* Pugsley. Tossed off as an afterthought in a foot-note, as a substitute, without any type designated, for "*E. latifolia* Pursh ex Wettstein," it goes directly back for its typification, first to Wettstein, then to Pursh. As already emphasized, Pursh did not definitely publish a new species; he merely misidentified a plant of Labrador with a Mediterranean plant now put into a different genus. The only comment which can possibly be cited as constituting a new diagnosis by Pursh indicates, if it indicates anything, one of the very small-flowered Labradorean species, perhaps either *E. purpurea* Reeks or *E. Williamsii* Robinson, with purple (not white) corollas rarely 4 mm. long. Wettstein also includes *E. officinalis* " var. *rotundifolia* Hook.," which was based solely on a collection of the white-flowered *E. disjuncta* Fern. & Wieg. His other citations may or may not be conspecific with *E. arctica;* they cannot be at the same time conspecific with that, with *E. disjuncta* and with *E. purpurea* or *E. Williamsii* (one or the other of these two presumably the plant which Pursh had). Although there seems no justification for the new name *E. frigida*, its publication would have added less to the confused ideas already prevailing if its author had taken pains to give it a definite typification; and by refraining from publishing an ill defined name he could have prevented hours of futile plodding through the obscure paths of nomenclature.

E. STRICTA Host. Already well known from southeastern Newfoundland, now recorded from the West Coast: sandy and gravelly strand west of Bard Harbor, St. John Bay, *Fernald & Long*, no. 29,027; wet open hillside, Neddy Harbor, Bonne Bay, *Harlow Bishop*, no. 532.

E. AMERICANA Wettst. The commonest species of southern and central Newfoundland, in dry open soil, extending north to Notre Dame Bay, the Exploits Valley and St. John Bay.

Pugsley, in his *Revision of the British Euphrasiae*, Linn. Soc. Journ., Bot. xlviii. 521 (1930), seems to refer *E. americana* to the European

E. brevipila Burnat & Gremli. At least, at the end of his discussion of *E. brevipila* he says:

> A form apparently inseparable from this species is found in Newfoundland and Canada—possibly an introduction from Europe. This is represented in the exsiccata[e], Macoun, No. 1696 (Cape Breton), Fernald, No. 3989 (Newfoundland) and Fernald, No. 8026 (Magdalen Is., Quebec).

The numbers of my own (and other's) collecting, *i. e. Fernald, Wiegand & Kittredge*, no. 3989 and *Fernald, Long & St. John*, no. 8026, are before me and they are very characteristic *Euphrasia americana*, as usual with the leaves and bracts glabrous; while, as Pugsley correctly states, in the European *E. brevipila* they are "all *clothed . . . with ± shortly stalked glands and short bristles.*" In *E. americana* the flowers are borne only on the upper half of the stem and branches, the first flowers of the central axis appearing (in well developed plants) at the 8th–11th node; and in mature fruiting plants the base of the central inflorescence is about midway on the axis. In the glandular European *E. brevipila*, however, as shown by Wettstein's plate (his t. vii. fig. 8) and by various European specimens (*Braun-Blanquet*, Fl. Raet. Exsicc. no. 676; *Pampanini*, Fl. Ital. Exsicc. no. 339; *Palmér*, Fl. Suec. no. 1079; *Fernald, Pease & Long*, no. 2377, identified by Pugsley; and unnumbered specimens from Fries, Fröman, Asplund and others) the central inflorescence (on the main axis) occupies, when fully developed, three-fourths to five-sixths of the entire central axis; the first flowers of the central axis appearing at the 5th–8th node. In *E. americana* the lower lip is white (only rarely bluish), but with bluish or purple veins; in *E. brevipila* the corolla is usually purplish or bluish ("Corolla pallide violacea vel coerulea"—*Wettstein;* "*Corolla . . . lilac*"—Pugsley). In *E. americana* the mature capsules are distinctly exceeded by the calyx, in *E. brevipila* not exceeded by it ("Capsula . . . calycem aequans vel superans"—*Wettstein;* "Capsule . . . equaling or exceeding the calyx-teeth"—*Pugsley*). Other characters, in the corolla and the calyx, could be pointed out which at once differentiate *E. americana* from *E. brevipila*, but those already indicated are sufficient. I have before me at this writing 141 numbers of *E. americana*, with the collecting of more than 50 of which I have been personally concerned. Like all the annual species it varies in stature (up to 4.4 dm. high), degree of branching and size of foliage and bracts; but in its essential characters it is abundantly distinct from the glandular-pubescent, low-flowering European *E. brevipila* with bluish to lilac corollas and short fruiting calyx.

OROBANCHE TERRAE-NOVAE Fern. RHODORA, xxviii. 235 (1927).

Since *Orobanche terrae-novae* was proposed as a species excellent additional characters have been detected in the capsules and seeds. Fruiting material from several stations in Newfoundland, as well as from Anticosti, shows that the capsules are lance-conic, more easily pushing off the marcescent corollas than in the continental *O. uniflora* L., which has the ovoid capsules usually closely invested by the marcescent corollas. In *O. terrae-novae* the seeds (FIG. 2) are more elongate,

FIG. 2. Seeds, × 45, of OROBANCHE TERRAE-NOVAE.

FIG. 3. Seeds, × 45, of OROBANCHE UNIFLORA.

with more delicate reticulation than in the continental *O. uniflora* (FIG. 3) or in the western *O. Sedi* (Suksd.) Fern. In the latter species they are rounded-ellipsoid and shorter than in *O. uniflora* and even more reticulate. See pp. 48, 95.[1]

*PLANTAGO MAJOR L., var. ASIATICA (L.) Dcne. BONNE BAY: alluvial islands and shores at mouth of Main River, *Fernald, Long & Fogg*, no. 2018; brackish swale near mouth of McKenzie River, no.

[1] Since the paragraph on *Orobanche* went into type, *A revision of the section Gymnocaulis of the genus Orobanche*, by Daisy M. Achey, has appeared—Bull. Torr. Bot. Cl. lx. 441–451 (June, 1933). Miss Achey reduces *O. terrae-novae* to varietal rank as *O. uniflora* L., var. *terrae-novae* (Fern.) Achey, l. c. 444 (1933). She seems not to have specially studied the capsules and seeds (FIGS. 2 and 3), usually very conservative structures, and she finds support in my statement, in the original discussion, that "*Orobanche terrae-novae* is perhaps merely a geographic variety," quoting the suggestion without the qualifying "perhaps." FIG. 2 shows seeds, × 45, of *O. terrae-novae* from Bard Harbor Hill, *Fernald & Long*, no. 29,053; FIG. 3, seeds, × 45, of *O. uniflora* from Johnston, Rhode Island, May 30, 1890, *J. F. Collins*.

2019. See p. 92. Collected by Mrs. Ayre in September, 1932 "miles from anywhere" in the region of Salmonier.

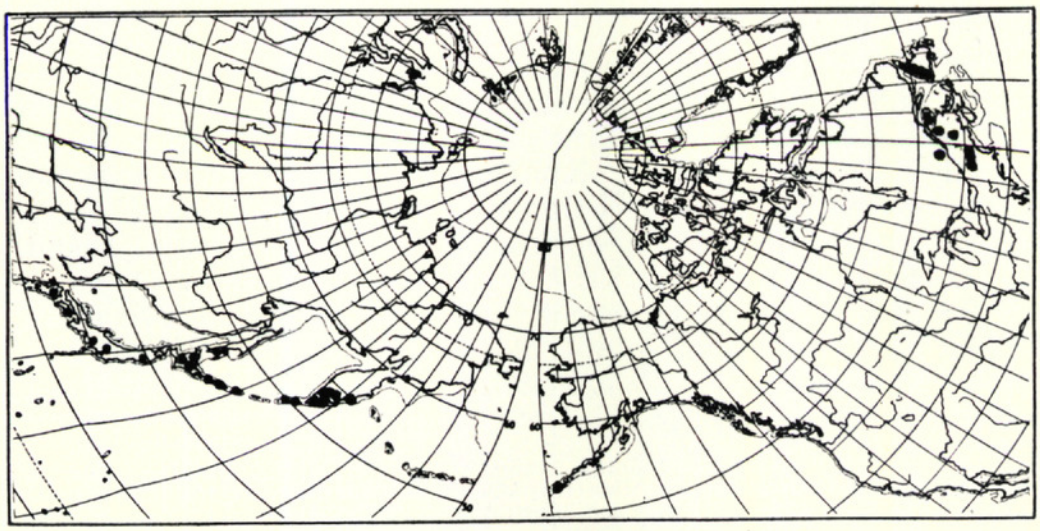
In the present wholly unsatisfactory state of our knowledge of the *Plantago major* group I am leaving the indigenous circumpolar plant as a variety of *P. major*. A thorough study of the group in America is much needed.

*P. LANCEOLATA L., var. SPHAEROSTACHYA Mert. & Koch, f. VERNALIS Béguinot BAY OF ISLANDS: turfy pasture-slope, Curling, *Fernald, Long & Fogg*, no. 2020.

Forma *vernalis*, characterized by short elliptic-ovate, instead of elongate leaves, and by very short, subglobose spikes, seems not to have been recorded in America.

GALIUM KAMTSCHATICUM Steller. To the recorded Newfoundland stations add the following. BONNE BAY: damp thicket under limestone crest (alt. 650 m.), Killdevil, *Fernald, Long & Fogg*, no. 2023. VALLEY OF HARRY'S BROOK: near Force-le-Plain, *R. B. Kennedy*, no. 332.

Galium kamtschaticum is a very notable case of bicentric distribution: northeastern Asia and adjacent Aleutian Islands, and northeastern America (MAP 25). I have tried in vain to separate our eastern



Map 25. Bicentric Range of GALIUM KAMTSCHATICUM.

American plant (*G. Littellii* Oakes; *G. circaezans*, var. *montanum* T. & G.) from the Asiatic but in every important point the two seem the same. *G. kamtschaticum* has been recorded from Washington and Oregon, but the plant of that area has several very evident characters (stiffer texture; 5–9, instead of 2–4, primary whorls of leaves; blades

narrower and with strikingly different venation; flowers more numerous; corolla of thicker texture, with obtuse, instead of acute, lobes; styles elongate, instead of sub-suppressed; etc.). The plant of Washington and Oregon is the thoroughly distinct *G. oreganum* Britton. Since the map was engraved I have learned of the occurrence of *G. kamtschaticum* in Corea.

SAMBUCUS PUBENS Michx. The northernmost station known on the West Coast is on BONNE BAY: base and lower slopes of Gros Morne, *R. H. Kimball*, no. 88.

The broader and more open as well as much larger inflorescences, the usually more oblong-elliptic leaflets well grown at flowering time and the more coarsely rugose seeds seem sufficiently to separate the American *Sambucus pubens* from the European *S. racemosa* L. Typical *S. pubens* has at least the young leaves somewhat pubescent beneath. However, the foliage may be wholly glabrous from the first.[1]

CAMPANULA ROTUNDIFOLIA L., var. ALASKANA Gray.

The more extreme plants with oblanceolate or lanceolate to oblong or narrowly obovate cauline leaves is very marked, but in some colonies there is clear intergradation with the commoner forms with cauline leaves linear.

The following eastern American material is referred to var. ALASKANA. NEWFOUNDLAND: sandy and turfy seashore, Bard Harbor, St. John Bay, *Fernald & Long*, no. 29,093; peat and turf bordering gravelly limestone barrens, Pointe Riche, *Fernald, Long & Fogg*, no. 2039; grassy strand, Ingornachoix Bay, *Fernald, Wiegand & Kittredge*, no. 4068; peaty and gravelly open slopes, French (or Tweed) Island, Bay of Islands, *Fernald, Long & Fogg*, no. 434. QUEBEC: bonaventure conglomerate (calcareous) sea-cliffs, Bonaventure Island, *Fernald & Collins*, no. 1179. NOVA SCOTIA: old cellar, Trinity Cove, and rocky slope, Atlantic Cove, St. Paul Island, *Perry & Roscoe*, nos. 376, 377.

See p. 56.

[1] SAMBUCUS PUBENS Michx., **f. calva**, f. nov., foliis ramulisque glabris.—Occasional through the range of the species, eastern Quebec to southern British Columbia, south to Connecticut, New Jersey, Ohio and Washington. TYPE: thickets in Fernald Pass, alt. about 850 m., between Mts. Mattaouisse, Fortin and Logan, July 13, 1923, *Fernald Griscom & Mackenzie*, no. 26,030 (in Gray Herb.).

Other forms of *S. pubens* are

S. PUBENS, f. **leucocarpa** (T. & G.), comb. nov. *S. pubens*, β. *leucocarpa* T. & G. Fl. ii. 13 (1841). *S. racemosa*, f. *leucocarpa* (T. & G.) House, N. Y. State Mus. Bull. 243–244: 69 (1923).

S. PUBENS, f. **xanthocarpa** (Cock.), comb. nov. *S. racemosa*, f. *xanthocarpa* Cock. Bull. Torr. Bot. Cl. xviii. 170 (1891). *S. pubens*, var. *xanthocarpa* Nieuwl. Am. Mid. Nat. iii. 310 (1914). *S. racemosa*, f. *chrysocarpa* Eames & Godfrey, RHODORA, xviii. 239 (1916). *S. racemosa*, f. *xanthocarpa* House, N. Y. State Mus. Bull. 243–244: 41 (1923).

S. PUBENS, f. **dissecta** (Britt.), comb. nov. *S. pubens dissecta* Britt. Mem. Torr. Bot. Cl. v. 304 (1894).

LOBELIA DORTMANNA L. The northern known limits in Newfoundland are on Notre Dame Bay and Bonne Bay. NOTRE DAME BAY: Tilt Cove, *Fernald, Wiegand & Darlington*, no. 6274. BONNE BAY: shallow pools in bog-barrens at 400–550 m. alt., tableland of Lookout Mt., *R. H. Kimball*, no. 61, *Fernald, Long & Fogg*, no. 2041. See p. 85 and MAP 8.

*SOLIDAGO HISPIDA Muhl., var. LANATA (Hook.) Fern. RHODORA, x. 87 (1908). The only Newfoundland station known is from PORT AU PORT BAY: dry exposed ledges and shingle on the limestone tableland, Table Mt., *Fernald & St. John*, no. 10,867.

S. HISPIDA, var. DISJUNCTA Fern. RHODORA, xvii. 2 (1915). To the type station (on the Humber) add BONNE BAY: turfy slopes below limestone crest (alt. 650 m.), Killdevil, *Fernald, Long & Fogg*, no. 2049.

S. HISPIDA, var. ARNOGLOSSA Fern. l. c. (1915). To the two stations originally published add the following. BONNE BAY: basaltic talus near mouth of Wallace's Brook, *Fernald, Long & Fogg*, no. 2046. BAY OF ISLANDS: peaty and gravelly thickets, French (or Tweed) Island, *Fernald, Long & Fogg*, no. 441. See p. 7.

S. CALCICOLA Fern. Already well known from the valleys of the Exploits and Harry's River (or Brook), now extended north to BONNE BAY: quartzite gravel and talus, slopes of Killdevil, *Fernald, Long & Fogg*, no. 2044. See p. 88.

*S. LEPIDA DC., var. ELONGATA (Nutt.) Fern. RHODORA, xvii. 9 (1915). BONNE BAY: gravelly shores and alluvial islands near mouth of Main River, *Fernald & Long*, no. 2060. See p. 91.

Already well known in the East from the Gaspé Peninsula, Anticosti, the Côte Nord and Lake St. John.

S. CANADENSIS L. Rare in Newfoundland. The following material is before me. VALLEY OF THE EXPLOITS: dry rocky clearings, Grand Falls, *Fernald, Wiegand & Darlington*, no. 6304. LOWER HUMBER VALLEY: dry limestone gravel, Hannah's Head, *Fernald & Long*, no. 2061. BAY OF ISLANDS: woods, Goose Arm, August 21, 1896, *Waghorne*. See p. 94.

BELLIS PERENNIS L. Although a frequent casual, persisting on garden refuse, the English Daisy is completely naturalized near the head of Humber Arm of BAY OF ISLANDS: pasture-turf, Crow's Gulch and turfy slope, Curling, *Fernald, Long & Fogg*, nos. 2073, 2074. BONNE BAY: turfy roadside, Woody Point, no. 2075. See p. 15.

ASTER RADULA Ait. The typical southern plant extends north to BONNE BAY: open marsh land, Bonne Bay, *Harlow Bishop*, no. 589; gravelly shores and alluvial islands near mouth of Main River, *Fernald, Long & Fogg*, no. 2062.

*A. ACUMINATUS Michx. Very local. BAY OF ISLANDS: spruce woods on southern slope of Lark Mt., *Fernald, Long & Fogg*, no. 460. REGION OF CAPE RAY: spruce thickets among the gneiss hills back of Port aux Basques, *Fernald, Long & Dunbar*, no. 27,139. See p. 4.

*A. NEMORALIS Ait., var. MAJOR Peck. Var. *Blakei* Porter. Known in Newfoundland only from REGION OF CAPE RAY: spruce thickets among the gneiss hills back of Port aux Basques, *Fernald, Long & Dunbar*, no. 27,141.

THE IDENTITY OF ASTER TRADESCANTI.—After the very extensive studies by Wiegand,[1] it might seem the part of discretion to let well enough alone and to refrain from raising anew the question of the identity of the long-baffling *Aster Tradescanti* L. The type of the latter (PLATE 261), however, is so definite and its similarity in every obvious point to one of the characteristic species occurring in Newfoundland, Quebec, Nova Scotia, New England and northern New York is so complete, that I feel that the long and vacillating career of *A. Tradescanti* as an unrecognizable species is now at an end.

After prolonged study of the bases of *Aster Tradescanti*, Asa Gray selected to stand as its type a specimen at the British Museum of a plant in the *Hortus Cliffortianus* herbarium, which had been raised from seed received from Morison of his *A. Virginianus ramosissimus serotinus parvis floribus albis Tradescanti*, Morison, Hist. iii. 121 (1715), "whence the name." In the Clifford herbarium Gray designated as "vera" the plant he had, rightly, selected as type; and in 1903, while photographing types at the British Museum, I made a silhouette-like and unfortunately vague portrait of it (PLATE 261), × ⅔. Of this type Wiegand concludes:

> This photograph does not seem to match any American form [of *A. paniculatus* Lam.] unless it be a shade condition of some normally wild form. The specimen may have come from shaded or crowded colonies in the garden. The heads are rather small, but are not fully developed, and possibly would have been larger if they had matured. The rameal leaves are more elliptic, more lax, and less rigid than in all forms of the species, but resemble somewhat those of *A. saxatilis*. Indeed, the photograph suggests *A. saxatilis* very much in the panicle and rameal leaves, but the cauline leaves are more divaricate. There is, however, no reason to believe that the low and slender *A. saxatilis* was in cultivation in Europe at that early period. In the opinion of the writer, this Morison plant [*i. e.* the Clifford plant, raised from Morison's seed] may very likely have been simply an undeveloped shaded individual of [*A. paniculatus*] var. *simplex*, but we have no way of proving this. It may, however, have been a hybrid form of *A. paniculatus* with *A. lateriflorus* or *A. vimineus*. . . . Because of this extremely vague and indefinite status of the name [*A. Tradescanti*] the writer believes that the best interests of taxonomy are served by abandoning it altogether.[2]

Wiegand's discussion of the type of *Aster Tradescanti*, above quoted,

[1] Wiegand, RHODORA, XXXV. 29–31 (1933).
[2] Wiegand, l. c.

contains the highly important statement that "the photograph suggests *A. saxatilis* very much in the panicle and rameal leaves"; but he dismisses without further consideration this very happy observation because, for some reason not clear to me, he felt that there is "no reason to believe that the low and slender *A. saxatilis* was in cultivation in Europe at that early date."

In my younger days, absorbing everything which pertained to the discovery and early exploration of my native state, I extracted from the "Voyages" of Champlain, Weymouth and others the amazing store of "first records" of plants of the region. Consequently, I am puzzled by Wiegand's dismissal of the periods of Morison and of Linnaeus (*Hortus Cliffortianus*) as too early for the eastern American *Aster saxatilis* to have been carried back to the gardens of Europe. Morison's account of *A. Tradescanti* was published in 1715: "Aster *Virginianus ramosissimus serotinus parvis floribus albis Tradescanti, Nobis.* . . . *florum* alborum, stellatorum, minimorum, ornati"; Linnaeus's account in Hort. Cliff. (408) in 1737. For several decades prior to Morison's date hundreds of eastern American species had been in European gardens, many of them appearing in the herbals of the 16th century; and the classic *Canadensium plantarum Historia* of Cornut, who dealt with American plants introduced into European gardens, was published in 1635.

Aster saxatilis (Fernald) Blanchard is a very neat plant of the river- and lake-shores of Newfoundland; of Nova Scotia; of Quebec, from Lake St. John to the neighborhood of the city of Quebec; of the Penobscot, Kennebec, Androscoggin, Merrimac, Connecticut and numerous smaller rivers of New England, including shores at Machias, Damariscotta and other early-explored coastal points; also shores of Lake Champlain and of smaller lakes in the Adirondack region. More than a century before Morison's account of *A. Tradescanti*, Champlain, with his highly botanical associate, Lescarbot, explored, and started colonies on, the coasts of Nova Scotia, Maine and elsewhere in eastern America. They even ascended the Penobscot to the very ledges along the Stillwater Branch of that river, which are the type-locality of *A. saxatilis;* and they recorded the necessity of there ceasing their up-river explorations because of the impossibility of taking their ships past the ledge-crowded water-falls. They also spent some time in the region of Machias and of Damariscotta. At approximately the same time (1605), Captain George Weymouth,

exploring the same coasts, specially recorded the plants seen and took back to England seeds and roots (among them the Weymouth Pine, (*Pinus Strobus*). Surely, *Aster saxatilis* had plenty of opportunity, prior to 1715, to reach European gardens from Nova Scotia or Maine, to say nothing of Newfoundland, Quebec and the Lake Champlain region.

It is, consequently, worth while to reproduce the photograph, poor as it is, of the plant in the Clifford herbarium, properly selected by Gray as the type of *Aster Tradescanti* (PLATE 261) and, likewise, to show, but on smaller scale (× ½), the top of a characteristic plant (PLATE 262) from Digby Neck (opposite Weymouth) in Nova Scotia, a specimen labeled and cited by Wiegand as typical *A. saxatilis*. This wild specimen, *Fernald & Long*, no. 22,762, of "the low and slender *A. saxatilis*," to use Wiegand's words, is 2 feet, 2½ inches high, the slender stems ("cauliculos graciles") of the plant cultivated by Morison were "binos aut tres pedes altos." No. 22,762 is a common and attractive plant of the region where, in 1605, the French sailed through Digby Gut to found Port Royal (now Annapolis Royal); and a specimen sent by *Mrs. Agnes M. Ayre* from the Avalon Peninsula in Newfoundland comes from a region where European colonists had settled as early as 1580.

The opportunities for seeds or roots of *Aster saxatilis* to have been carried to Europe before 1715 were, as sufficiently emphasized, apparently more numerous than Wiegand realized; and the similarity of a loosely grown indigenous specimen of it to the type of *A. Tradescanti* is so striking (even to the "*folia* palmum longa, salignea, angusta, . . . in ambitu sparsis *denticulationibus* serrata" of Morison's account) that I find myself fully subscribing to Wiegand's statement, that "Indeed, the photograph suggests *A. saxatilis* very much." It seems to me so satisfactory a match that, as one of the godfathers of the latter, I find myself abandoning the name *A. saxatilis* (Fern.) Blanchard (1904) in favor of A. TRADESCANTI L. (1753). That Asa Gray was baffled by the type of *A. Tradescanti* was quite natural, for, like Wiegand, he was trying to fit it to some native specimen of *A. paniculatus*. In Gray's time there was no material of *A. saxatilis* in American herbaria.

ERIGERON HYSSOPIFOLIUS Michx., var. VILLICAULIS Fern. RHODORA, xvii, 17 (1915). Originally described from Table Mt., Port au Port Bay. Occasional on the West Coast northward to the Straits; also on Anticosti. The following additional Newfoundland stations may be

recorded. HA-HA BAY: turfy or gravelly shelves, crests or talus of diorite, Ha-Ha Mt., *Pease & Griscom*, no. 29,137. STRAITS OF BELLE ISLE: dry soil, Poverty Cove, *M. E. Priest*, no. P1; turfy or peaty pockets in limestone ledges, Sandy (or Poverty) Cove, *Fernald, Long & Dunbar*, no. 27,143; dry horizontal limestones, Rock Marsh, Flower Cove, *Fernald, Long & Dunbar*, no. 27,142. ST. BARBE BAY: limestone barrens near Ice Point, *Wiegand, Gilbert & Hotchkiss*, no. 29,136; ST. JOHN BAY: peaty margins of dry limestone barrens, Old Port au Choix, *Fernald, Long & Fogg*, no. 2071. INGORNACHOIX BAY: dry peaty and turfy limestone barrens, Gargamelle Cove, no. 2072; calcareous rocks and talus, entrance to Port Saunders Harbor, *Fernald, Wiegand & Kittredge*, no. 4136.

Var. *villicaulis* is not always villous. Its chief characters are its low and depressed habit, crowded lower leaves (mostly obtuse), and its scapiform peduncles.

(*To be continued*)

DUMONTIA IN MAINE.—In RHODORA of March, 1923, pp. 33–37, Setchell reported *Dumontia filiformis* (Fl. Dan.) Grev. from Newport, R. I., and suggested that this alga probably occurred further north in New England. Lewis and Taylor confirmed this by a further collection in Buzzard's Bay, Massachusetts. See RHODORA, October, 1928, p. 195. It had probably been overlooked because of its similarity in appearance to the abundant *Halosaccion*. Setchell's prediction in another case has been verified, for on May 23, 1933, I found it growing abundantly in a tidal pool at Hale's Beach, North Brooklin, Maine.

Perhaps a hint to the amateur collector may not be amiss. As is well known, photosynthesis takes place under the influence of the rays at the red end of the spectrum. Since these rays are soonest absorbed by sea water, leaving only the violet, the deeper growing *Rhodophyceæ* produce a fluid which restores the red color so necessary to their life processes. When *Dumontia* grows in shallow water or at half tide, it often fails to form this phycoerythrin and appears yellow or brownish and may easily be mistaken for one of the brown algae. Often the red color is completely absent, or may appear for only a few millimeters at the base, where that part of the plant is shaded. Two years ago *Halosaccion*, which is believed to be a near relative of *Dumontia*, was growing in this same pool and showed this same characteristic.